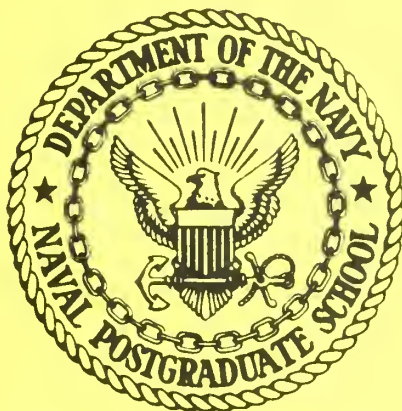


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Monterey, California



SOME THOUGHTS ON THE USE OF  
SURVEY METHODS IN POLICY RESEARCH

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## Abstract

The present concern over the number, quality, and appropriateness of surveys being used to collect research data, especially for policy analysis, has led to questions concerning the need for, and alternatives to, survey methodologies. This paper presents an analysis of the drawbacks to the use of surveys in economic research and suggestions for ways they may be more profitably incorporated in future research. Examples of such innovative strategies from the economic research area are discussed.

## I. Introduction

There seems to be an increasing reliance on the use of surveys to collect data to be used in a wide variety of research settings. In many cases the research results are to be used to derive (or support) policy decisions. The questions which arise, and which motivate these remarks, are: "Is survey research necessary?"; "Is it cost-effective?"; "What alternatives exist?"; and "How might they be done better, when necessary?".

## II. Economic Research and Use of Survey Methods

There exist two major ways economists analyse "what people do" in order to predict what their future economic behavior will be:

a) They assume that there exists a utility function with certain properties which embody the important decision variables and parameters, and which relates their combination to levels of consumer satisfaction; then they predict on the basis of changes in parameters through analytical manipulation of mathematical models based on these functions.

b) They assume that people behave rationally, or at least consistently, and observe what people do, or did, and therefore derive predictions of what they will do and how well off they will be, comparatively, when parameters change. This is the "revealed preference" approach.

In the former case, we may use the theory of consumer behavior so developed to construct testable hypotheses of the way they will behave in the future, and judge the "validity" of the underlying assumptions and theoretical structures (e.g., "forms"



of utility functions) on the basis of the actually observed behavior. In this case one may argue that surveys taken before parametric changes in one's environment occur, or before decisions are made even without such changes, will provide "ex ante" information which may enable the theoretical structures to be modified and thus be better predictors of results than if events are merely "allowed" to happen.

However economists have been traditionally skeptical of the value of many such survey techniques because of their knowledge of the basic incentives which are believed to motivate behavior. For example, many experiments have demonstrated the failure of the "what if" type hypothetical choice results to conform to the ubiquitous utility theory assumption of "Transitivity of Preferences". The rationale is that since the subject consumers did not actually have to make and, live with, their choices, their incentives were insufficient to get them to make the true choices (i.e., the ones they really would have made in such an actual choice situation). An additional confounding factor occurs in situations where the goods or services under study are not pure "private goods" but rather exhibit varying degrees of externalities and/or are provided by the government (at some level) as "public goods". The problem here is simple: If the amount of a good or service to me is not diminished by your consumption of it, I'd rather that you pay for it, or that you be responsible for its existence rather than me. I have an incentive to hide (to different degrees) my true preferences in such cases.

Next consider the revealed preference approach. If we wait until behavior is actually observable to attempt relative utility calculations [not between consumers, but for an average, or subset

of, consumer(s)], we have lost the ability to influence these utility levels. In addition, many other variables will have also changed, making it difficult to lay the credit or blame for changes in satisfaction on the targeted policy variable. Likewise if we collect only data from past actions, we may have too few data points from which to generalize and the ceteris paribus conditions may also have been violated. Thus although it would seem that surveys could facilitate collection of more data points and then enhance the probability of accurate predictions, even when based in large part on the revealed preference approach, the same objections as noted above regarding the utility theory approach would then hold in this case.

For these reasons economists have long been hesitant to rely in any significant way on survey data in the future sense of the word, that is, where hypothetical situations and questions are analysed. We as a profession have been more amenable to the use of surveys to collect data dealing with the present, i.e., factual augmentation, when files and records are insufficient. However, some economists certainly have based their research efforts on survey work. The recognized leader among economists in the development and use of survey data is George Katona, who until recently was research coordinator at the Survey Research Center at the University of Michigan. His position and proclivities have led him to differ significantly with the majority of economists in assessing the purpose and utility of survey research. He has said that "The primary purpose of surveys are to obtain information on trends over time and a functional relationship among variables.



This statement has, first, a negative implication: Determination of a position as it prevails at a given time is not the major purpose of surveys .... Such findings do not constitute major goals of survey research and are subject to large errors .... Absolute measurements represent but the starting point for studies in Behavioral Economics" [3, p. 409-410].

Katona's assertion that "Studies of changes in attitudes and expectations and their relation to behavior call for the collection of new data [through surveys]", is tempered by his further statement that "field observations and experiments may supplement the survey method" [p. 405]. The major assertion however is consistent with the pioneering work done over the years by the Survey Research Center in providing information on the attitudes and intentions of consumers and business decision makers which has proven extremely useful in formulating macro-economic policy.

In my view the situation is not clear cut at all. As is usually the case, the use of survey versus non-survey methods to collect information and data in a variety of problem settings should be determined by the problem and its setting, and generally will involve some judiciously chosen mix of the two methodologies. Additionally one must distinguish between surveys which collect:

- a) Data on physically existing facts (e.g., the shelf-prices at stores) which do not exist in records or files;
- b) Data on non-manipulable individual characteristics (e.g., demographics);
- c) Data which requires a person to recall behavior or opinions from the past;
- d) Data on probable future behavior or expectations.

Certainly the majority of economists have few qualms about the first two uses of surveys. For example, in my own research, we have surveyed the catchment population eligible to use military health care facilities to ascertain the age/sex beneficiary status in order to derive subgroup utilization rates. Such data does not exist in the presently structured military health care system. The problems with these sorts of surveys are mostly technical -- i.e., selecting the correct sample size and its composition to obtain reasonable estimates, and are very amenable to solution.

However there are more serious problems with the latter two types of surveys. Many times people cannot accurately recall their behavior or facts about a previous situation. Added to this are the incentive problems mentioned above associated with motivating people to answer questions about their future plans/behavior truthfully. In addition, Katona has noted that "Survey research is most reliable if it is directed toward obtaining information on variables that are widely represented in the universe", [p. 421], agreeing that, "unlike laboratory experiments, surveys cannot manipulate independent variables" [p. 423].

What then would I recommend when it comes right down to the question of whether we need, or should use, a survey methodology? Based on my experience and education it seems that we have come to the juncture of survey and experimental methods. I believe that what is required is a damper on the "knee-jerk" propensity to write out a survey instrument everytime we need some data and on the equally habitual reluctance to incorporate any survey method or data into research projects. Our best bet is to integrate, in an innovative and appropriate manner, survey methods where the payoff warrants it.

The questions we may ask are:

- a) How should this recommended innovative integration of survey and non-survey research be determined?; and
- b) How is it being done in economic research at the present?

In my opinion, the basic question should be, "What am I trying to do, and what are the feasible ways to do it, and their respective costs and benefits, both monetary and non-monetary?". Each of us does this implicitly when we seek data and information for our own use. For example, when searching for a place to buy film for our camera, we are likely to base our decision on past experience and a casual perusal of the newspaper ads. However, when searching for a camera, we may ask friends, known to have purchased one, where they bought it and if they felt it was a "good buy". When buying a specific make of car, we however tend to rely more heavily on rigorously collected price data, and may only supplement this with a friend's opinion. Clearly the greater the cost of making a wrong decision, the more accurate and objective we want our data to be. The collective experiential survey data of Consumer Reports, cost-effectively available, is preferable to a small sample of friends' opinions for major purchase decisions. However, we would not individually attempt to collect such data if Consumer Reports was not available. It would not be worth it.

In research projects whose outcome is to be a specific policy recommendation, such costs and benefits, in a probabilistic sense, should be assessed during the research methodology development stage. The expected value of each feasible strategy will depend on an assessment of the relative accuracy and reliability of the data to be so obtained. These factors must be explicitly considered.

There is no way to generalize a specific algorithm in such cases because there are innumerable unique potential situations. However, below I describe a couple of examples of recent research projects which illustrate my points.

### III. Innovative Use of Modified Survey Methodologies in Economic Research

As mentioned earlier, there is a major problem in using survey research in cases where those surveyed have an inherent incentive to hide their true feelings or opinions (as contrasted with situations where there are merely insufficient incentives to assess them or where significant uncertainty exists). Thus if in voting on a bond issue we incorporated a space for those who vote "yes" to indicate how much they would be willing to pay toward the cost of providing the facility under consideration, we would expect that individuals who favor the issue would either vote "no" hoping that enough others would vote "yes" and be assessed, or would vote "for" the issue but significantly understate the value they place on having the facility hoping to minimize the amount of additional tax they personally would have to pay.

This phenomena has caused great difficulty in the past in that we collectively have had to rely upon indirect assessments -- i.e., everyone's tax would go up (if approved) by the same marginal increment. This results in some public goods not being provided even though a sufficient number of voters might be willing to pay differing amounts to finance it, because a majority were not willing to pay the additional stated tax increment. Likewise, even when bond issues pass, all this indicates is that enough voters were willing to pay the stated "price", not that the optimal relative tax

burden has been defined.

When voting or otherwise expressing preferences for non-local public goods, most times there is little direct connection between passage of such an issue and the cost to the voter. Thus, the voters or respondents may tend to indicate they favor the adoption of some policy because they perceive the cost to them to be negligible, or fail to perceive the opportunity cost of passage.

Thus research into the desirability of producing or providing such public goods has concentrated on the technological aspects and the associated costs of producing the goods or services and to a lesser extent on "a priori" utility assessments using utility theory and revealed preference. The benefits and opportunity cost assessments tend to be left to be debated by opposing sides and are assumed to be communicated to the population of voters by the media. The consumer opinions are then "collected" either through monitoring constituent mail or by allowing an eventual popular vote on the issue, on an either/or basis only. Although polls may be taken to assess the general climate of consumer opinion, the polls are not used (generally) to determine the policy decision directly.

Groves and Ledyard have developed a research methodology [2.] which is posited to be a useful first step in changing this process. They have designed a "preference revelation" process, with feedback to the "voter", which elicits the subjects valuation of the project under consideration. The major element present here is a penalty/reward structure for the voter as a result of an indicated decision or value assessment. While the details are too complex to present here, the salient point for our purposes is that, recognizing the inherent difficulties in using a standard survey for value assessment,



they have attempted to construct an incentive mechanism tied to truthfulness on the survey form to ensure greater accuracy of the data collected for decision-making. The results of such a perfected methodology would facilitate a benefit calculation to accompany the cost estimates of specific public good type projects and would allow those projects to be chosen which yield maximum benefits as revealed by the population and which would be financed in a pre-determined non-homogenous way.

Groves has also related this "Team Theory" work to the problem of managing a decentralized firm [1.]. It appears that this same sort of quasi-survey approach with incentives may well have application to the management of the Military Health Care Delivery System under Capitation Budgeting with accompanying structural changes.

The potential for the adoption of a universal enfranchisement plan - i.e., National Health Insurance (NHI) - to significantly alter the existing utilization patterns by individuals of the overall Health Care Delivery System has made it difficult to estimate accurately the cost of the various competing NHI proposals before the congress. Our experience with the rapid cost escalation accompanying the adoption of Medicare and Medicaid has caused significant concern and motivated a desire to know more exactly the probable financial consequences of NHI implementation.

Existing (natural experimental) data is not sufficient to accomplish these projections because of the significant differences in the coverages and real prices of health care to individuals under NHI vis-a-vis the current patterns of insurance and care. Likewise, the intricate nature of the decision process which leads to the observation of a demand for care and the previously discussed



"public good" aspect associated with NHI [i.e., if NHI passes, everyone has it not just those who might be willing to pay] are among the many reasons why a straight-forward survey of individuals to ask their probable future utilization under various plans is an inappropriate method to provide answers.

The Rand NHI study, a \$32 million project to measure and predict the effects of price changes on utilization of health care services was thus designed as a mix of an experimental, randomized clinical trials type strategy and a survey component. This measurement of the price effect is not simple. "Measurement of the effect of price on demand can be refined in several ways. For example, we may wish to know whether the effect of price varies with income and total expenditure. Do poor families respond more readily to price than affluent ones? If so, they will benefit differentially from a generous health insurance plan. Do families with major illnesses respond differently from those with minor illnesses? If so, estimates of the effect of catastrophic health insurance must be based only on data from those with such illnesses" [4., p. 6]. Further, given that we are interested in effects of price changes, changes in coverage must also be evaluated. "To compute this change, one must know the current coverage of the population; unfortunately, detailed information on this subject is rare. National Health Survey estimates can be used to determine the percentage of the population with no coverage, but they are not helpful if one wants to determine the improvement that would be caused by any particular plan....among persons who now have partial coverage (as most do)" [4., p. 6]. The Rand study had to fill these gaps, since, for example..."...so few of the respondents know the details of their

policy that the National Health Survey has stopped asking such questions" [4., p. 9].

After painstaking analysis, the Rand group designed a 5 year experiment in which 3200 families from 4 areas will be randomly enrolled in variously structured health plans which systematically vary the net price for health care they face. Their utilization and expenditure experiences will be carefully and exhaustively monitored (\$5 million of the budget is for computer charges). Although most of the data will be collected through non-survey methods, surveys do play a significant, and integral role in the study.

For example, in the participant selection process, 6,000 families from each site, selected from clustered random population samples were given screening interview surveys. Subsequently 2,000 families were chosen for lengthy personal surveys in accordance with the Morris Finite Selection Model on the basis of the information gained from the initial screens. Then, based on the more detailed family specific data gathered in the lengthy surveys, 800 families were selected--500 for enrollment in the experimental group, and 300 for the control group using the Conlisk-Watts Model to choose and distribute the families among the various plans to minimize non-random variation in the utilization experiences to be observed. Finally, quarterly surveys of the participants will provide supplemental and valuation data to that collected directly during the experiment.

Although there have been many questions raised about specific aspects of the study, it seems a fair evaluation to state that the study group, on the basis of rigorous analysis of the

potential biases and other problems with the data likely to result, has taken a significant step toward providing the most useful demand data yet available, as well as providing an example of an innovative mix of our two subject research methodologies.

#### IV. My View of the Future

It seems clear to me that the most valuable empirical research in the future will utilize a judicious combination of survey and experimental methodologies. The character of the major social economic problems facing us and the fact that in our ever more fine-tuned economy mistakes may impose long term penalties we can ill afford to pay, seems unambiguously to point to economic research which integrates the probable reactions of consumers to a greater extent than ever before. The previous predilection of economists (and others) to see the problem in a "partial equilibrium" setting is slowly giving way to a broader perspective in structuring research to solve seemingly micro scale problems. This will not always involve survey research, and in fact in many instances, may involve less (or no) such methods in cases where they previously had been used. But certainly survey research will provide significant benefits, when carefully tailored to the problem at hand.

A final example may best illustrate my point. Without going into lengthy detail, many, including myself, have recommended that the Military Health Services System be significantly restructured to decentralize decision making and provide greater incentives for cost containment. The major elements of such a system are the use of capitated budgets for facilities and their providers, increased authority for local decision makers, regional budgets and resource responsibility, sharing of the fruits of cost savings with health

care providers and staffs, and (eventual) dual choice of enrollment for the eligible population. The view of the problem taken is thus clearly holistic and any recommendations for a specific implementation strategy and associated pilot tests involves many facets. In particular we recognized that allowing "dual choice" could have potentially catastrophic fiscal implications if many people decided to use non-direct facilities and providers (i.e., through CHAMPUS) as their source of care. Likewise, we realized that giving the providers positive incentives for cost control as we suggested, could lead to less acceptable care as evaluated by patients, and thus further exacerbate the outflow of patients to CHAMPUS enrollment. It was thus deemed important to track the collective patient assessment of the health care delivery process. This information is possessed only by the patient and is by nature extremely subjective. Thus the only way to obtain this data was to ask the patients. For this reason we have suggested and developed a Patient Satisfaction Monitoring System. This relies on a random sample encounter-based survey methodology which provides feedback to the clinic level staff and indicates areas in which modifications in their behavior might be productive. This information, in combination with the internal systemic incentive changes we have suggested, will tend to mitigate unnecessary enrollment turnover and hence minimize system costs.

The point is that the decision to develop and use such a survey methodology was made after an analysis of the overall situation indicated that it was the best way to obtain the patient-subjective satisfaction data which could have drastically affected system-costs,

and hence had to be addressed. Thus, sometimes there are better alternatives to the use of surveys, sometimes not. The choice of the tool should be dictated by the nature of the problem--not by habit or fiat.

## REFERENCES

- [1.] Groves, Theodore, "Incentives in Teams", Econometrica, Vol. 41, No. 4, July 1973, pp. 617-631.
- [2.] Groves, Theodore and John Ledyard, "Optimal Allocation of Public Goods: A Solution to the 'Free Rider' Problem", Econometrica, Vol. 45, No. 4, May 1977, pp. 783-809.
- [3.] Katona, George, Psychological Economics, Elsevier, New York, 1975.
- [4.] Newhouse, Joseph, "A Design for a Health Insurance Experiment", Inquiry, March, 1974, pp. 5-27.



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